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ABSTRACT

This 322-point checklist was designed to help executives make an intelligent choice when selecting a small computer for a business. For ease of use the questions have been divided into ten categories: Display Features, Keyboard Features, Printer Features, Controller Features, Software, Word Processing, Service, Training, Miscellaneous, and Costs. To use the checklist, one reads through the entire list of questions, lining out those which do not apply to a particular business. The remaining items are then categorized to see if they are considered Essential (E) or Nice-to-have (N). Equipment from three different vendors can be compared by making checkmarks in the spaces provided to the right of each question. By completing this checklist it can be determined which computer company comes closest to satisfying one's needs. A glossary of computer terms containing 163 items of jargon frequently found in computer advertisements is included. (Author/LLS)

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Checklist/Guide To Selecting A Small Computer

Developed
by
Wilma E. Bennett



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WHY THIS BOOK WAS WRITTEN

The language of computers is so complex that the average executive cannot hope to keep current. It all started in 1945 when a moth was actually found in one of the electrical relays of the Navy's Mark II computer. When the computer team was asked about the delay in the computer's operation they said they were debugging the machine. People have been "debugging" computers ever since.

Most terminology is neither so humorous nor so easy to figure out. Brochures supplied by manufacturers are full of bits, bytes, bauds and bezels. This complexity makes it difficult for the businessperson to choose a small computer that will solve data processing problems. We all know of a company that has purchased a computer only to scrap it within two years for one that better meets its needs.

The purpose of this guide is to help avoid making that type of time-consuming and costly mistake. Well-chosen computer equipment can increase productivity and improve management decisions. Often companies operate so much more effectively with a computer that they say they would go out of business if forced to return to manual processing. This improvement in productivity is possible because they chose the right equipment in the first place. It is possible to make a satisfactory selection without becoming a computer expert. The key is to ask the various salespersons the right questions.

I

How To Use The Checklist

This book contains a checklist of 332 questions relating to computers. For ease of use the questions have been divided into these ten categories: Display Features, Keyboard Features, Printer Features, Controller Features, Software, Word Processing, Service, Training, Miscellaneous and Costs. To use the checklist, read through the entire list of questions, lining out those which do not apply to your particular business. Then categorize the remaining items to see if you consider them *Essential* (E) or *Nice-to-have* (N). There are blanks for this indication in front of each question.

You can compare equipment from three different vendors by making checkmarks in the spaces provided to the right of each question. No one vendor offers all of the possibilities suggested here, but by completing this checklist you will be able to determine which company comes closest to satisfying your needs.

The questions are written without using specialized terms as much as possible. However, when such words must be used they can be found in the glossary at the end of the book. This *Glossary of Computer Terms* contains 163 terms and abbreviations arranged in alphabetical order. They are defined in everyday English to help you cut through the jargon that appears in the typical computer advertisement.

Selecting a computer for your business does not have to be a risky undertaking. Used together the checklist and the glossary should take the uncertainty out of selecting a small computer to fit your company's needs.

II

Checklist

DISPLAY FEATURES

E or N	V E N D O R		
	1	2	3
☐ 1. Can the display be tilted to minimize glare?	☐	☐	☐
☐ 2. Can the screen be raised or lowered?	☐	☐	☐
☐ 3. What color is the screen? (Many prefer green.)	☐	☐	☐
☐ 4. Is there an audible alarm?	☐	☐	☐
☐ 5. Is there volume control on the audible alarm?	☐	☐	☐
☐ 6. Can parts of the display be highlighted?	☐	☐	☐
☐ 7. How bright is the display?	☐	☐	☐
☐ 8. Can the operator control the intensity of the display?	☐	☐	☐
☐ 9. Can parts of the display be made to blink?	☐	☐	☐
☐ 10. How big is the screen?	☐	☐	☐
☐ 11. Is the display convection cooled or fan cooled?	☐	☐	☐
☐ 12. Are the characters easy to read?	☐	☐	☐
☐ 13. How big are the characters?	☐	☐	☐
☐ 14. Can you correct an error by merely striking over it?	☐	☐	☐
☐ 15. How easy is it to delete a line?	☐	☐	☐
☐ 16. How easy is it to delete a paragraph?	☐	☐	☐
☐ 17. How easy is it to insert a line?	☐	☐	☐
☐ 18. How easy is it to insert a paragraph?	☐	☐	☐
☐ 19. Can you print copies of the screen image?	☐	☐	☐
☐ 20. Can it scroll?	☐	☐	☐
☐ 21. Is split screen available?	☐	☐	☐
☐ 22. How long does it take for a requested display to appear on the screen?	☐	☐	☐
☐ 23. Is it document oriented or page oriented?	☐	☐	☐
☐ 24. Are there operator prompts or helps?	☐	☐	☐
☐ 25. How much desk space does it take?	☐	☐	☐
☐ 26. How heavy is the CRT?	☐	☐	☐
☐ 27. Can it handle the typing of equations and formulas?	☐	☐	☐

E or N**V E N D O R****1 2 3**

___ 28.	Does it allow for superscripts and subscripts?	___	___	___
___ 29.	Can you compose forms on the screen?	___	___	___
___ 30.	Are computer graphics available?	___	___	___
___ 31.	How extensive are they?	___	___	___
___ 32.	Color graphics?	___	___	___
___ 33.	Are graphics rotatable to any position on the screen?	___	___	___
___ 34.	Is the screen mask painted on or flashed on?	___	___	___
___ 35.	Can it perform all the functions of a typewriter?	___	___	___
___ 36.	Can it perform algebraic calculations?	___	___	___
___ 37.	Can it detect missing information?	___	___	___
___ 38.	Can it detect alpha versus numeric information?	___	___	___
___ 39.	Can it detect relationship errors?	___	___	___
___ 40.	Can messages be sent from one display terminal to another?	___	___	___
___ 41.	Can you draw on the screen?	___	___	___
___ 42.	Can you draft to scale?	___	___	___
___ 43.	Can it plot charts?	___	___	___
___ 44.	Can it support freeform entry?	___	___	___
___ 45.	Are air filters required?	___	___	___
___ 46.	Will it automatically turn off if unused for a given amount of time to prevent burn-in?	___	___	___
___ 47.	If so, is it easy to restore screen images?	___	___	___
___ 48.	What indicator lights are there?	___	___	___
___ 49.	Does the cursor blink?	___	___	___
___ 50.	What is the shape of the cursor?	___	___	___
___ 51.	Can the operator select cursor shape?	___	___	___
___ 52.	Is the screen made of non-glare glass?	___	___	___
___ 53.	What else has been done to reduce glare?	___	___	___
___ 54.	How much power does it use?	___	___	___
___ 55.	Does it require a dedicated circuit?	___	___	___
___ 56.	What temperature range will it work in?	___	___	___
___ 57.	Is a special desk or table required?	___	___	___
___ 58.	Is a light pen option available?	___	___	___
___ 59.	Is a touch screen option available?	___	___	___
___ 60.	How many characters does the screen hold?	___	___	___
___ 61.	Can you page forward and backward?	___	___	___
___ 62.	Can it underline areas to be filled in?	___	___	___

KEYBOARD FEATURES

E or N	V E N D O R		
	1	2	3
___ 63. What cursor movement keys are there?	___	___	___
___ 64. Left?	___	___	___
___ 65. Right?	___	___	___
___ 66. Up?	___	___	___
___ 67. Down?	___	___	___
___ 68. Next line?	___	___	___
___ 69. Next field?	___	___	___
___ 70. Home?	___	___	___
___ 71. Will the keys repeat if held down?	___	___	___
___ 72. Some keys?	___	___	___
___ 73. All keys?	___	___	___
___ 74. Is there a local print key?	___	___	___
___ 75. Are there + - x + keys?	___	___	___
___ 76. Will the keyboard lock if a letter instead of a number is entered in pre-designated fields?	___	___	___
___ 77. Are there keys for paging backward and forward or must a command be typed in?	___	___	___
___ 78. Is preventive maintenance of the keyboard required?	___	___	___
___ 79. Is the keyboard protected against liquid spills?	___	___	___
___ 80. How protected is the keyboard from dust, crumbs, paper clips, staples?	___	___	___
___ 81. Does it offer both pica and elite character spacing?	___	___	___
___ 82. Are various print styles available?	___	___	___
___ 83. What letters and symbols are on the keyboard?	___	___	___
___ 84. Is lower case as well as upper case available?	___	___	___
___ 85. Is the keyboard comfortable?	___	___	___
___ 86. Does the keyboard tilt?	___	___	___
___ 87. Do frequently used keys (space bar, enter, return) have rounded rather than squared edges for operator comfort?	___	___	___
___ 88. Is the erase key placed where it cannot be hit accidentally?	___	___	___
___ 89. Is a number pad option available?	___	___	___
___ 90. Is the keyboard separate from the display?	___	___	___

E or N

V E N D O R

1 2 3

- | | | | | |
|---------|---|-----|-----|-----|
| ___ 91. | If the keyboard is separate from the display, how flexible is the connecting cord? Does it really allow movement of the keyboard? | ___ | ___ | ___ |
| ___ 92. | Do the keys click? | ___ | ___ | ___ |
| ___ 93. | Can the operator turn off the key clicks? | ___ | ___ | ___ |
| ___ 94. | Is there a matte finish and dark color on keyboard and key caps to reduce screen reflections? | ___ | ___ | ___ |
| ___ 95. | Is the keyboard low enough so pencils won't roll under it? | ___ | ___ | ___ |
| ___ 96. | How many function keys are there? | ___ | ___ | ___ |
| ___ 97. | Are function keys already programmed or can you program them yourself? | ___ | ___ | ___ |
| ___ 98. | Are there home keys which are either dished out or have a raised dot in the center? | ___ | ___ | ___ |

PRINTER FEATURES

E or N

V E N D O R

1 2 3

- | | | | | |
|----------|---|-----|-----|-----|
| ___ 99. | Is there a paper thickness control? | ___ | ___ | ___ |
| ___ 100. | What is the widest paper it will accept? | ___ | ___ | ___ |
| ___ 101. | What is the narrowest paper it will accept? | ___ | ___ | ___ |
| ___ 102. | What is the shortest form it will print? | ___ | ___ | ___ |
| ___ 103. | What is the longest form it will print? | ___ | ___ | ___ |
| ___ 104. | How do you set form length? | ___ | ___ | ___ |
| ___ 105. | By switch? | ___ | ___ | ___ |
| ___ 106. | By punched paper tape? | ___ | ___ | ___ |
| ___ 107. | What indicator lights are there? | ___ | ___ | ___ |
| ___ 108. | Power out? | ___ | ___ | ___ |
| ___ 109. | Power on? | ___ | ___ | ___ |
| ___ 110. | Alert? | ___ | ___ | ___ |
| ___ 111. | Left and right margins? | ___ | ___ | ___ |
| ___ 112. | Others? | ___ | ___ | ___ |
| ___ 113. | Is there an audible alarm? | ___ | ___ | ___ |
| ___ 114. | What operator controls are on the printer? | ___ | ___ | ___ |
| ___ 115. | How long does it take to change the ribbon? | ___ | ___ | ___ |
| ___ 116. | Can the ribbon be changed without getting ink on the hands? | ___ | ___ | ___ |

E or N	V E N D O R		
	1	2	3
___ 117. What is the ribbon life?	___	___	___
___ 118. What is the quality of printing?	___	___	___
___ 119. Will the printer motor turn off automatically when no data is received for a given period of time?	___	___	___
___ 120. Does it have a tear bar?	___	___	___
___ 121. How many lines are printed per inch?	___	___	___
___ 122. How many characters are printed per inch?	___	___	___
___ 123. How much power does it use?	___	___	___
___ 124. Does it require a dedicated power source?	___	___	___
___ 125. What temperature range will it work in?	___	___	___
___ 126. Does it require a special stand?	___	___	___
___ 127. Does a stand come with it?	___	___	___
___ 128. How reliable is it?	___	___	___
___ 129. What is the mean time between failures?	___	___	___
___ 130. Can it print unattended?	___	___	___
___ 131. Will it stop printing if it is out of paper?	___	___	___
___ 132. How many carbons will it print clearly?	___	___	___
___ 133. Does it have a paper holder?	___	___	___
___ 134. Can it be fine adjusted to line up the margin on forms?	___	___	___
___ 135. Can it print on individual sheets?	___	___	___
___ 136. How noisy is it? (Over 76 decibels usually requires a separate room.)	___	___	___
___ 137. Is a wide-carriage printer available?	___	___	___
___ 138. Can the print head be changed?	___	___	___
___ 139. How fast does it print?	___	___	___
___ 140. Can it print labels or envelopes?	___	___	___
___ 141. Can it print checks or drafts?	___	___	___
___ 142. Does it require a special floor covering to minimize static buildup?	___	___	___
___ 143. How often does the printer have to be cleaned?	___	___	___
___ 144. What features does it have for diagnosing problems?	___	___	___
___ 145. Are switches located where they can easily be reached by the operator?	___	___	___
___ 146. Are seldom-used switches located out of the way so they can't be accidentally bumped?	___	___	___

CONTROLLER FEATURES

E or N	V E N D O R		
	1	2	3
___ 147. How many devices can be attached to the controller?	___	___	___
___ 148. Does this number change depending on the kind of devices?	___	___	___
___ 149. How far can peripheral devices be located from the controller?	___	___	___
___ 150. Can it work unattended?	___	___	___
___ 151. How does it store information?	___	___	___
___ 152. Hard disk?	___	___	___
___ 153. Floppy disk?	___	___	___
___ 154. Cassette tape?	___	___	___
___ 155. How much information can it store on-line?	___	___	___
___ 156. How much information can it store off-line?	___	___	___
___ 157. Does the failure of one device attached to the controller affect other peripherals?	___	___	___
___ 158. Is data lost if power is interrupted?	___	___	___
___ 159. How much heat does it generate?	___	___	___
___ 160. Does it require air conditioning?	___	___	___
___ 161. What size character displays will the controller support?	___	___	___
___ 162. Can it support line printers or character printers?	___	___	___
___ 163. How much room does it require?	___	___	___
___ 164. Is it noisy?	___	___	___
___ 165. How much power does it use?	___	___	___
___ 166. Does it require a dedicated power source?	___	___	___
___ 167. How long does it take a diskette to be ready for operation after it is mounted?	___	___	___

SOFTWARE

E or N	V E N D O R		
	1	2	3
___ 168. Does the equipment vendor supply a turnkey system or will you have to purchase software from another vendor?	___	___	___
___ 169. Which software packages are included in the price of the equipment?	___	___	___
___ 170. How complete is the documentation that comes with the system?	___	___	___
___ 171. What guarantees come with the software?	___	___	___
___ 172. How much ROM or RAM storage space will the operating system software require?	___	___	___
___ 173. How much memory will the programming language require?	___	___	___
___ 174. How much RAM storage space will the application programs use up?	___	___	___
___ 175. Does the operating system allow each workstation in a multiple station system to perform different tasks?	___	___	___
___ 176. Can you customize the vendor's programs to suit your methods of record keeping?	___	___	___
___ 177. Can programs which run on one of the vendor's products be run on other models in the line?	___	___	___
___ 178. Can the vendor demonstrate (not merely describe) application programs specific to your needs?	___	___	___
___ 179. How long have the software packages been used/tested?	___	___	___
___ 180. Can the vendor supply the names of other software users as references?	___	___	___
___ 181. What problems do other users report in the software?	___	___	___
___ 182. What licensing requirements, if any, does the vendor have for software use?	___	___	___
___ 183. Is it possible to transfer software to a larger processor in case the current one becomes inadequate?	___	___	___
___ 184. Are there procedures for the copying of files so that a backup file is available in the event of destruction of the main file?	___	___	___
___ 185. Does the system allow for simple errors and permit you to recover or erase the error and continue without costly backtracking or downtime?	___	___	___
___ 186. Does software include a keyboard lockout, while the program is calculating, to prevent the operator from fouling up the system?	___	___	___

E or N

V E N D O R

1 2 3

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|---|-----|-----|-----|
| ___ 187. If custom software is to be developed, must the system hardware be purchased many months before it actually can be used so the software vendor can use it to develop programs? | ___ | ___ | ___ |
| ___ 188. Does it use an interpreter language or a faster compiled language? | ___ | ___ | ___ |
| ___ 189. How easy are the packages for an operator to learn? To use? | ___ | ___ | ___ |
| ___ 190. Do the software routines use information in the form in which it is already available in your business? | ___ | ___ | ___ |
| ___ 191. Do reports present information in a form that is convenient for your business operations? | ___ | ___ | ___ |
| ___ 192. Does it permit array processing so you can produce aging reports, cross-foot financial reports, and statistical summaries? | ___ | ___ | ___ |
| ___ 193. What is the speed of execution of the operating system? | ___ | ___ | ___ |
| ___ 194. Can math calculations be performed on stored information? | ___ | ___ | ___ |
| ___ 195. Are the educational software programs interactive? | ___ | ___ | ___ |
| ___ 196. Does the system work with more than one programming language (to enhance resale value)? | ___ | ___ | ___ |
| ___ 197. Which of the following business application software packages are available (either from the equipment vendor or from a software house) and compatible with the equipment? | | | |
| ___ 198. General ledger? | ___ | ___ | ___ |
| ___ 199. Accounts Receivable? | ___ | ___ | ___ |
| ___ 200. Accounts Payable? | ___ | ___ | ___ |
| ___ 201. Payroll? | ___ | ___ | ___ |
| ___ 202. Medical Billing? | ___ | ___ | ___ |
| ___ 203. Personnel? | ___ | ___ | ___ |
| ___ 204. Word Processing? | ___ | ___ | ___ |
| ___ 205. Mailing List? | ___ | ___ | ___ |
| ___ 206. Arithmetic Calculations? | ___ | ___ | ___ |
| ___ 207. Statistical Calculations? | ___ | ___ | ___ |
| ___ 208. Engineering Calculations? | ___ | ___ | ___ |
| ___ 209. Graphics? | ___ | ___ | ___ |
| ___ 210. Restaurant Recipe/Menu File? | ___ | ___ | ___ |
| ___ 211. Musical Scores? | ___ | ___ | ___ |
| ___ 212. Tax Preparation/Computation? | ___ | ___ | ___ |
| ___ 213. Forms Creation? | ___ | ___ | ___ |

E or N

V E N D O R

1 2 3

___ 214. Typesetting?	___	___	___
___ 215. Bookkeeping?	___	___	___
___ 216. Billing?	___	___	___
___ 217. Histogram/Scattergram?	___	___	___
___ 218. On-line Inventory?	___	___	___
___ 219. Point-of-Sale Inventory?	___	___	___
___ 220. Morse Code?	___	___	___
___ 221. Teacher's Log?	___	___	___
___ 222. Check Register?	___	___	___
___ 223. Client/Patient Records?	___	___	___
___ 224. Apartment Management?	___	___	___
___ 225. Job Costing?	___	___	___
___ 226. Cash Register?	___	___	___
___ 227. Stock Portfolio Evaluation?	___	___	___
___ 228. Energy Usage Analysis?	___	___	___
___ 229. Telephone List?	___	___	___
___ 230. Report Generator?	___	___	___
___ 231. Order Entry?	___	___	___
___ 232. Sales Analysis?	___	___	___
___ 233. Security Network?	___	___	___
___ 234. Forecasting?	___	___	___
___ 235. Timekeeping?	___	___	___
___ 236. Electronic Mail?	___	___	___
___ 237. Insurance Records?	___	___	___
___ 238. Which of the following educational software packages can be used on the system?			
___ 239. Flight Simulator?	___	___	___
___ 240. Math Tutorial?	___	___	___
___ 241. Typing Tutorial?	___	___	___
___ 242. Ham Radio?	___	___	___
___ 243. Basic Statistics?	___	___	___
___ 244. Foreign Languages?	___	___	___
___ 245. Music Theory?	___	___	___
___ 246. Grammar?	___	___	___
___ 247. BASIC?	___	___	___

E or N

V E N D O R

1 2 3

- ___ 248. Which of the following miscellaneous software packages are available and compatible?
- ___ 249. Operating System?
- ___ 250. Debugging Program?
- ___ 251. Programming Aids?
- ___ 252. Inquiry Routine?
- ___ 253. Data Base Management?
- ___ 254. Emulation software to interface with your computer?
- ___ 255. Random Access Utility?
- ___ 256. Games?

___	___	___
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___	___	___
___	___	___
___	___	___
___	___	___
___	___	___

WORD PROCESSING

E or N

V E N D O R

1 2 3

- ___ 257. Does it have word processing capabilities?
- ___ 258. Is there adjustable line spacing?
- ___ 259. Can it generate form letters?
- ___ 260. Can it automatically center titles?
- ___ 261. Can it store frequently used information to insert in new documents?
- ___ 262. How easy is it to delete a line?
- ___ 263. How easy is it to delete a paragraph?
- ___ 264. How easy is it to insert a line?
- ___ 265. How easy is it to insert a paragraph?
- ___ 266. Will it wrap the end of a line?
- ___ 267. Will it automatically number pages?
- ___ 268. How easy is it to move portions of the text around?
- ___ 269. Will it automatically right justify?
- ___ 270. Is there a special place for operator comments or text which is not to be printed?
- ___ 271. Can it space letters in proportion to their size?
- ___ 272. Are various print styles available?
- ___ 273. Can it interleave information from two sources? (e.g. form letters with names and addresses.)
- ___ 274. What other special capabilities does it have?

___	___	___
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___	___	___
___	___	___
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___	___	___

SERVICE

E or N	V E N D O R		
	1	2	3
___ 275. If a piece of equipment cannot be repaired on-site, how soon can a replacement be made?	___	___	___
___ 276. Is there a service center within 50 miles?	___	___	___
___ 277. How long does it take to respond to a call for service?	___	___	___
___ 278. How long is the regularly scheduled maintenance day?	___	___	___
___ 279. Is emergency service available outside the regular day?	___	___	___
___ 280. How long is the lead time between order and installation?	___	___	___
___ 281. How reliable is the system?	___	___	___
___ 282. Is the vendor solvent enough to stay in business for the life of the lease?	___	___	___
___ 283. Will parts supplied by subcontractors be available for the life of the lease?	___	___	___
___ 284. Will the vendor install the equipment?	___	___	___
___ 285. What are the vendor's emergency procedures in the event part or all of the system is destroyed?	___	___	___

TRAINING

E or N	V E N D O R		
	1	2	3
___ 286. Are training materials and manuals supplied?	___	___	___
___ 287. Are manuals and training materials easy to understand?	___	___	___
___ 288. How skilled does a typist have to be to learn the system?	___	___	___
___ 289. How long does it take to train an operator?	___	___	___
___ 290. Can a casual user (e.g. a manager) learn to operate it rapidly?	___	___	___
___ 291. Will training be provided at your site or at a designated vendor location?	___	___	___
___ 292. If the user can program the system, how long does it take to become proficient?	___	___	___

MISCELLANEOUS

E or N	V E N D O R		
	1	2	3
___ 293. Has the vendor installed the equipment in any business similar to yours?	___	___	___
___ 294. Can you visit another installation or talk to references?	___	___	___
___ 295. Are security features available?	___	___	___
___ 296. Magnetic card reader?	___	___	___
___ 297. Lock and key?	___	___	___
___ 298. Password feature?	___	___	___
___ 299. Is there a recovery method in case a password is forgotten?	___	___	___
___ 300. How many units has the vendor installed already?	___	___	___
___ 301. What language is it programmed in?	___	___	___
___ 302. Are all devices UAL and CSA approved?	___	___	___
___ 303. Do they sell programs that fit your needs? (e.g. payroll, inventory.)	___	___	___
___ 304. Can it solve complex engineering and statistical problems?	___	___	___
___ 305. Is the system upgradable? Can you add more devices as your workload increases?	___	___	___
___ 306. Can it sort through information to produce management reports?	___	___	___
___ 307. Can it alphabetize?	___	___	___
___ 308. Can it arrange information in numerical sequence?	___	___	___
___ 309. Can extra memory be added?	___	___	___
___ 310. What other peripheral devices are available?	___	___	___
___ 311. Optical character recognition?	___	___	___
___ 312. Photocomposition?	___	___	___
___ 313. Telecommunications?	___	___	___
___ 314. Can it input and output at the same time?	___	___	___
___ 315. Does it have a time card option?	___	___	___
___ 316. Can it tie in to a cryptographic device?	___	___	___

COSTS

E or N	V E N D O R		
	1	2	3
___ 317. What is the cost to lease for a month?	___	___	___
___ 318. A year?	___	___	___
___ 319. Two years?	___	___	___
___ 320. What is the shortest lease term possible?	___	___	___
___ 321. What is the purchase price?	___	___	___
___ 322. What is the cost of maintenance?	___	___	___
___ 323. Of service?	___	___	___
___ 324. What hardware items require preventative maintenance?	___	___	___
___ 325. What are the installation charges?	___	___	___
___ 326. What does it cost to have an electrician install a special circuit/plug if needed?	___	___	___
___ 327. What is the cost of ribbons?	___	___	___
___ 328. What is the cost of floppy disks or tapes?	___	___	___
___ 329. Shipping charges?	___	___	___
___ 330. Is there an extra charge for service if located more than a given distance from a service center?	___	___	___
___ 331. Can you upgrade during the lease period without penalty?	___	___	___
___ 332. What is the cost of training people to use the system?	___	___	___

III

Glossary of Computer Terms

Abend. Abnormal ending. This refers to the failure of a data processing system or any unit of that system.

Alphanumeric. Alphabetical or numerical. Also shortened to alphameric. This is used in referring to whether numbers or letters or both can be typed into a specific field.

Analog. One of the two basic kinds of computers. Analog computers measure changes in physical phenomena such as pressure, temperature and humidity. They are special purpose devices. (See also Digital.)

Application Programs. These are programs that are written to meet the special needs of the purchasers of computer equipment. (See Software.)

Archival Storage. The storage on external devices of large masses of computer data which is used infrequently. External devices are those outside of the basic central processing unit.

Array. The setting aside of a section of memory to hold a group of related data values.

ASCII. American Standard Code for Information Interchange. This is a character set containing 64 upper case letters and symbols. It prints capital letters only.

Assembler. One of several levels of programming languages that are required to cause a computer to operate. Assembler languages use symbols to represent instructions and storage locations. Also called a symbolic language.

Audit Trail. A printed record of the date and time a transaction is processed. It may include other information such as the operator's name or initials. It can also be a record which tracks a transaction through all stages of processing.

Auto Repeat. Describes keys which will continue to print as long as they are held down. It means the same as rollover and Typamatic.

Automated Office. An office of the future which makes optimum use of the latest computer capabilities such as word processing and electronic mail.

BASIC. Beginners All-Purpose Symbolic Instruction Code. A programming language developed at Dartmouth College which is widely used by time-sharing systems.

Batch System. A method by which data fed to the computer is not processed immediately. It is fed to an external storage device during the work day and sent to the mainframe at a later time (usually at night) when the host computer is less heavily used. It is a less expensive method than real time processing. (See Real Time System.)

Baud. Bits per second. Refers to the transmission speed of data. A 1200 baud rate would transmit 1200 bits per second.

Bezel. This is a small hood that extends over the upper edge of a CRT screen to reduce glare.

Bidirectional Printing. The capability of a printer to print both backward and forward. This saves time because the print head does not need to return to the beginning of a line before continuing.

Binary. A method of counting which uses combinations of only two digits, zero and one. Digital computers do all processing through binary codes in which one is represented by a magnetic charge and zero by the absence of such a charge.

Bit. BInary digiT (either zero or one.) A bit is the smallest piece of information that can be fed to a computer.

BPS. Bits per second. A measure of the speed of a computer.

BTU. British Thermal Units. A measure of the heat generated by various pieces of equipment.

Buffer. A place for short term storage of data that is being fed into a computer or printed out from it.

Bug. A mistake or malfunction.

Bundled. (as in Bundled Company.) A company which supplies software, training, manuals, service, systems support, and nationwide control with an order for its equipment.

Byte. Generally eight bits. All letters, numbers, and symbols can be

represented by various groupings of ones and zeros into a byte. One byte describes one letter, number, or symbol.

Card Reader. A device which scans keypunched cards and transmits data from them into the system. Card readers are becoming obsolete because keypunching is being replaced by typing information into a video display.

Cathode Ray Tube. Usually abbreviated to CRT. This is a screen-like device that looks like a television.

Character Printer. A device which prints only one letter or number or symbol at a time. The opposite of line printer.

Characters. Letters, numbers, and symbols which are displayed on a screen or printed by a printer.

Chargeback System. A system which computes the actual cost of running an application program on the computer, and allocates these costs to the departments in the company to whom the service is provided.

Chassis. Cabinet.

Cluster. A group of terminals that share a common transmission line to the host computer.

COBOL. COmmon Business Oriented Language. A language that forces programmers to document and describe what the program is doing as they write it. This makes it easier to maintain a program or to finish it if the programmer leaves the company.

Computer Graphics. Using CRT screens to show graphic displays. The range of capabilities is great and includes color displays, cartooning, blueprint drafting and graph plotting.

Controller. A device which controls a small group of terminals at a location which is remote from the host computer. Also known as Processing Unit.

Core Storage. This is also known as internal storage. Core storage means that data is stored within the computer itself rather than on external devices such as tapes and disks.

CPU. Central Processing Unit. The same as the mainframe or host computer. It is the part of the computer that does the actual processing.

Cursor. An indicator which moves around on a CRT screen to show where the next information should be entered.

DASD. Direct Access Storage Device. This is a category of external storage devices in which data can be reached directly without having to sort through other data, as opposed to sequential storage devices such as tapes. Some examples of DASD are disk, drum, data cell and magnetic bubble devices.

Data. A collection of facts in its raw form. Data usually has to be interpreted in some way before it can serve as useful information.

Data Base. A collection of inter-related data items which can be used by more than one application program. It provides for the sharing of common data.

Data Base Administrator. The person in the data processing department of a company who monitors access to information in computer files.

Data Under Voice. A version of line sharing that is currently used to send voices and computer data along the same telephone lines at the same time. It requires that computer data travel at the same slow speeds as voices. Many large corporations use it to make more cost-effective use of their teleprocessing network.

Debug. To correct problems in a computer program or system. The term originated when a moth was found to cause the malfunction of one of the earliest computers, the Navy's Mark IV.

Dedicated Power Source. (Dedicated circuit.) An electrical circuit which is used only for computer equipment. Other office equipment is not plugged into the same wiring. This prevents fluctuations in current which could affect the performance of computer equipment.

Device Independence. The ability to add different or additional peripherals to a system without having to rewrite application programs.

Digital. One of the two basic kinds of computers, digital computers operate by counting. These are general purpose machines as opposed to analog computers which are special purpose machines. Specific programs are used to make digital computers perform specific tasks. By changing the program, you can change the task a

computer performs. This cannot be done with analog computers. Most computers used in business are digital.

Digitize. As in Digitized Voice. To change information into digital form as a series of electrical pulses.

Disk. A method for storing computer data. A disk pack is a removable unit containing several magnetic disks which can be mounted in a magnetic disk storage unit. Disk packs offer the speed advantage of random access (as opposed to tapes which permit sequential access only).

Diskette. See floppy disk.

Display. Another name for a screen or CRT.

Display Configuration. See screen format.

Distribute¹ Data Processing. (DDP) The decentralization of data processing, data files, data retrieval and edit capabilities, etc. at sites away from the mainframe. It requires intelligent terminals or minicomputers which may or may not interface with a host computer.

Downtime. The amount of time that a teleprocessing system or piece of computer hardware is unavailable for processing.

Dumb Terminals. Peripheral devices which have no computer processing abilities built into them. They must transmit all data to a host computer to be processed.

EBCDIC. (Pronounced eb' si dick.) Extended Binary Coded Decimal Interchange Code. A character set which prints a wide variety of symbols and letters in both upper and lower case. (See also ASCII.)

Electronic Funds Transfer. Transferring money from one account to another via computer.

Electronic Mail. A radically different concept of distributing mail which takes advantage of CRTs, printers, a teleprocessing network and new developments in electronic gadgetry. Through this type of system all mail, messages, and information would be routed electronically rather than via paper.

Enter. To physically depress an input key on a terminal in order to transmit data for processing to the main computer.

Fanfold. The standard method of folding continuous paper in which the paper is folded back and forth on itself. Most computer printouts are fanfolded.

Field. The place where one item of information fits on a screen. It can be any number of characters long but is dealt with as one piece of data. It can extend more than one line in length. Field refers only to the space which is designated to receive information. It does not refer to the title for that space.

Floppy Disks. Small external storage devices about the size of a 45 rpm record. They get their name from the fact that they are flexible. They are permanently encased in a cover to protect their surfaces.

Flowchart. A visual method of showing the order in which events must occur in order to achieve a certain result.

Font. Another name for a style of alphabet. It can also refer to the print head on a printer and the style of letters it makes.

Footprint. This is the shape of the base of a CRT. It is referred to when discussing the size of the base which is an important consideration when desk space is at a minimum.

Format. This refers to the placement of headings on a CRT screen. It is the electronic equivalent of a paper form. Also called screen or mask.

Fortran. FORMula TRANslator. A computer language which is useful for performing mathematical calculations.

Freeform. The ability to enter data on a screen without using a mask. Information is typed in a set order and items are separated by semi-colons.

Function Keys. Usually a set of 12 keys to the right of the main part of the keyboard. Sometimes these keys are numbered so they can be used like a calculator. Other times they are given special uses to fit the needs of the user such as erase, cursor movement, etc. Also called Program Function keys, abbreviated PF keys.

Halon. A chemical used in fire extinguishers designed for computers. It does not destroy electrical equipment.

Hardware. This refers to actual pieces of equipment such as terminals, printers, mainframe computers, etc. Opposite of software.

Hertz. Times per second. Abbreviated Hz.

Host. A very powerful and expensive computer which controls many satellite terminals.

Information. Data that has been changed into a form which is meaningful and useful to human beings.

Input Line Time. The time elapsed between the depression of the entry key and the receipt of data by the central processing unit.

Inquiry. A request for information from a computer system.

Integrated Voice and Data. The ability to send computer data, phone conversations, and document facsimiles over the telephone lines at the same time. It is still in development because voices cannot yet be economically changed into digitized data so that they can be transmitted at the same high speeds as computer data.

Intelligent Terminals. Terminals which have computing capabilities built into them. They vary greatly in capability and amount of internal storage, and may perform alone or in conjunction with mainframes.

Intensity. Refers to how bright the letters on a screen are. Many CRTs permit the operator to vary intensity. Operators tend to dim the screen as the day wears on because it is easier on their eyes.

I/O. Input/Output. Pertaining to either input or output, or both.

Keycaps. Individual key covers. Their shape, color, and placement affect productivity and accuracy. Also called key-tops. Different vendors offer different keycaps.

Kilo- As a prefix it means thousand. In computer terminology it actually means 2^{10} which equals 1024 but is generally rounded off to 1000.

Kilobaud. One thousand bauds.

Kilobyte. One thousand bytes.

LED. Light Emitting Diode.

Line Printer. A printer which prints an entire line at one time as opposed to printing individual characters.

Line Sharing. See Integrated Voice and Data.

Local Format Storage. Allows frequently used screen formats to be stored on-site in an intelligent terminal rather than in the host computer.

Logoff. A message sent to the host computer indicating that the terminal is to be taken out of active status. Also called signoff.

Logon. A message sent to the host computer indicating that the terminal is to be put into active status. This is a security measure and is usually done once a day. Also called signon.

Lumens. A measure of light. Most CRT characters appear at about 10 lumens of intensity.

Machine Readable. Forms of data storage which cannot be read by humans such as tapes, disks, and cards.

Magcard Reader. A device which reads identification cards which have a magnetic strip embedded in them. It is used to protect certain terminals from unauthorized use.

Mainframe. See Host.

Mask. This is a set of headings on a CRT screen which is to be filled in by a terminal operator. Often referred to as screen format, or screen design.

Master File. A permanent copy of data. Similar to data base.

Matrix. Characters are made up of dots on screens or on certain printers. A matrix is a grouping of these dots in a regular order of rows and columns. The most common matrix size is seven columns of dots wide and nine rows of dots high or 7 x 9.

Megabyte. One million bytes.

Menu. A list of tasks displayed on a CRT from which the terminal operator makes a selection.

Message Switching. Sending messages from one terminal to another either at the same or different locations.

Microcomputer. A small computer which differs from a minicomputer in that only one person uses it and it has less capacity. Tomorrow's microcomputers will be as powerful as today's minicomputers.

Microsecond. One-millionth of a second.

Minicomputer. A small computer that supports up to eight terminal devices. Minicomputers are rapidly becoming as powerful as host computers.

Mode. The way in which a particular terminal is operating at any given time. The most common modes are production mode, calculator mode, and test mode.

Modem. MOdulator-DEModulator. A device which changes digital signals into electrical frequencies so they can be transmitted over telephone wires. Modems also convert electrical frequencies back into digital signals.

Monocase Mode. All letters of the alphabet are upper case (capitals) only.

Multiplex. A hardware device which enables a number of terminals to share the same transmission line.

Nanosecond. One-billionth of a second.

Network. Various groups of terminals connected to the same main-frame by transmission lines.

OCR. Optical Character Recognition. A method whereby machines can read a specially designed alphabet. It is heavily used in the billing operation of many companies.

Offline. See Batch System. It also refers to equipment *not* under the control of the central processing unit.

Online. See Real Time System. Also refers to equipment under the control of the central processing unit.

Operating Programs. Programs that are purchased with the computer. They tend to be much more complex than application programs. (See Application Programs.)

Optical Scanner. A machine which can read printed information. Optical scanners are rapidly becoming sophisticated enough to read any printed matter.

Pad. A group of keys on the keyboard which are close to each other and located apart from other keys. Most common is a number pad like that found on calculators.

Paper Slew Rate. The speed at which paper moves through a printer. It is usually given in inches per second. However the new laser printers are so fast they move at speeds of 20,000 lines per minute.

Password. A method of protecting terminal security by having the operator type in a specified word or code before the computer will allow any other activity to occur.

Peripherals. These are various devices that can be attached to a controller, including keyboards, printers, optical scanners, etc.

Picosecond. One-trillionth of a second.

Pinfeed. A method of moving paper through the printer. The paper is in a continuous form and has sprocket holes along the sides. It can be supplied with multiple carbons. Requires an extra processing step to tear off the edges with sprocket holes after printing.

Poll. All terminals which share telephone lines (because they are a distance from the host computer) take turns using those lines. Each terminal is polled at regular intervals to see if it has any information which must be sent to the mainframe over the lines.

Ports. Plugs on a controller to which various peripherals can be connected. The number of ports determines how many devices can be connected to a controller.

Print Wheel. A wheel with letters, numbers, or symbols on separate prongs around the edge. The wheel spins around to allow the appropriate character to be printed. This is much faster than standard typewriter key printing.

Processing Unit. See Controller.

Programmer. A person who writes instructions for the computer in specialized languages or codes. As the cost of computer equipment goes down, programmers are rapidly becoming the most expensive element in computer processing. This is leading to development of easy computer languages, which anyone can learn in a matter of hours, so that companies can become less dependent on highly trained programmers.

Programs. Instructions written in very precise terms that tell a computer what to do. See Software and Application Programs.

Protected Field. A field on the CRT screen in which data cannot be changed. Titles and headings are usually protected.

Queue. The sequencing of computer transactions based on some predetermined order of priority. Also a waiting line formed by transactions waiting for service.

RAM. Random Access Memory.

Random Access Utility. A software program which will allow a small computer to retrieve information in a variable (operator-chosen) rather than pre-set order.

Read Only. The capability of getting information from a computer storage place (e.g. disk) without being able to change that information. Read only devices do not permit correcting or updating information after it has been entered. They often have cost, speed, and/or storage capacity advantages. Read Only Memories (ROMs) are used for permanent data storage.

Real Time System. A method whereby data entered into the computer is processed immediately. It is more complex and requires more expensive hardware and software than batch processing. It is used in applications where information is needed immediately. (See Batch System).

Recoverability. The ability of a system to prevent data from being lost due to a power failure or any other cause.

Refresh. To give the screen display a new charge of electricity so the letters won't fade away. Screens typically refresh 60 times a second (60 Hertz).

Response Time. The time which elapses between the entry key being pushed and a computer response appearing. This can vary from instantaneous to several minutes depending on the complexity of the transaction and how many terminals are sharing the lines.

Risk Analysis. A systematic way of analyzing security risks in a data processing system. Also includes the evaluation of methods used to minimize those risks.

RJE. Remote Job Entry. Sending data to the host computer from a distant site by telephone lines or satellite.

Rollover. The same as auto repeat and Typamatic.

Scratch Pad. An area within computer memory where data can be temporarily stored. It is erased at the end of the working day.

Screen Format. The number of lines per screen and characters per line. The most common is 80 characters per line on a 24 line screen which equates to a 1920 character screen size. Also called display configuration.

Screen Size. The number of characters it would take to completely fill a screen. The most common sizes are 480, 960, 1920 and 3440 characters.

Scroll. A movement of information on the CRT display which makes the first line disappear as a new line of information appears at the bottom of the screen.

Software. See Operating Programs.

Storage Devices. These are various methods of storing computer data. They include magnetic tapes, cassettes, disks, cards, floppy disks and paper tape.

Tape. A method of storing information outside of the computer. Tapes offer the advantage of portability but are slow because all data is sequential. The reader cannot instantly move to the correct data record, but must first wind the tape to the correct spot. Tapes are best used where data must be processed sequentially.

Teleprocessing. The transmission of data via a network of telephone lines and/or satellite between two or more separate locations.

Terminal. A device which either feeds information to a computer (input) or receives information from it (output). Thus it refers not only to teletypewriters and CRTs but also to printers.

Terminal ID. Terminal Identification. This is a code which specifically identifies each terminal to the host computer. On the newer terminals the ID is built into the circuitry so that it is automatically sent to the mainframe and does not have to be typed in.

Terminal Operator. A typist who operates a teletypewriter or CRT keyboard.

Test Mode. Using the terminal to see if the computer program is performing accurately. Test mode does not change any information on computer files. See also Mode.

Text Editing. One of the capabilities of word processors. This permits easy changes to be made to written material that has been stored in computer (usually floppy disk) memory.

Time-Sharing. The sharing of a computer by many users at the same time in order to reduce costs. This is possible because of the high speeds at which computers operate.

Transaction. A single transmission of data from a terminal to a computer and the response transmitted back to the terminal from the computer.

Turnkey Systems. Computer systems where all of the hardware, software, and systems development needed by a user are provided by the same vendor.

Typamatic. A copyrighted term of IBM which indicates a key that will continue to print as long as it is held down. Called auto repeat or rollover by other vendors.

Unattended Printing. Using printers after normal working hours when no one is around to monitor them.

User. The company or person who buys a computer. Within large companies user departments are those outside of the data processing area.

Utilities. These are programs you can buy from the vendor to run on his equipment. This eliminates the need of doing your own programming.

Vendor. Companies which sell computers are usually referred to as vendors.

Vendor Out of Standards. Indicates that the equipment is not performing up to the standards stated in the lease or purchase contract.

Video. (Also Video Display Unit.) The same as CRT, Display and Screen terminal.

Window. A CRT which is hooked up to a host computer.

Word Processing. The preparation of correspondence, reports and other documents using the special capabilities of computers. Changes and redrafts are especially easy and do not require proof-reading of the entire document.

Workstation. A place where one terminal operator can work. It

typically includes a display unit and a keyboard located on a table or desk.

Wraparound. A term used in word processing. Automatic word wraparound counts the number of characters being entered, and when a line is full it automatically starts the next word on the following line. This saves time because the operator doesn't have to hyphenate or hit the return key.